UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/587,574	07/31/2006	Janne Kuivalainen	1034456-000049	8935

21839   7590   09/05/2008
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EXAMINER
SHECHTMAN, SEAN P

ART UNIT	PAPER NUMBER
2121	

NOTIFICATION DATE	DELIVERY MODE
09/05/2008	ELECTRONIC

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

ADIPFDD@bipc.com

	Application No.	Applicant(s)
	10/587,574	KUIVALAINEN ET AL.
Office Action Summary	Examiner	Art Unit	
	SEAN P. SHECHTMAN	2121	

-- *The MAILING DATE of this communication appears on the cover sheet with the correspondence address* --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS,
WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on <u>30 June 2008</u>.

2a)☒ This action is **FINAL.**   2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) <u>1-3,6-8,11,14,15 and 17-19</u> is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) <u>1-3,6,7,14,15 and 17-19</u> is/are rejected.

7)☒ Claim(s) <u>8 and 11</u> is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on <u>31 July 2006</u> is/are: a)☒ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☒ All b)☐ Some * c)☐ None of:

      1.☒ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
      application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1)☒ Notice of References Cited (PTO-892)

2)☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)

3)☐ Information Disclosure Statement(s) (PTO/SB/08)
    Paper No(s)/Mail Date _____.

4)☐ Interview Summary (PTO-413)
    Paper No(s)/Mail. Date. _____.

5)☐ Notice of Informal Patent Application

6)☐ Other: _____.

DETAILED ACTION

Information Disclosure Statement

1.   The information disclosure statement filed 1/28/08 fails to comply with 37 CFR

1.98(a)(1), which requires the following: (1) a list of all patents, publications,

applications, or other information submitted for consideration by the Office; (2) U.S.

patents and U.S. patent application publications listed in a section separately from

citations of other documents; (3) the application number of the application in which the

information disclosure statement is being submitted on each page of the list; (4) a

column that provides a blank space next to each document to be considered, for the

examiner's initials; and (5) a heading that clearly indicates that the list is an information

disclosure statement. The information disclosure statement has been placed in the

application file, but the information referred to therein has not been considered.

Claim Rejections – 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly
> claiming the subject matter which the applicant regards as his invention.

2.   Claims 1-3, 6, 14, 15, 17, 18 are rejected under 35 U.S.C. 112, second

paragraph, as being indefinite for failing to particularly point out and distinctly claim the

subject matter which applicant regards as the invention.

Claims 14, 15, 17, 18 depend from cancelled claims 4, 5, 9, 10 and therefore

claims 14, 15, 17, 18 are rejected as failing to define the invention in the manner

required by 35 U.S.C. 112, second paragraph. The structure which goes to make up

the device must be clearly and positively specified. The structure must be organized

and correlated in such a manner as to present a complete operative device. Note the

format of the claims in the patent(s) cited. The examiner further notes the MPEP

2173.06 which states, in part:

> "All words in a claim must be considered in judging the patentability of a claim
> against the prior art. In re Wilson, 424 F.2d 1382, 165 USPQ 494 (CCPA 1970). The
> fact that terms may be indefinite does not make the claim obvious over the prior art.
> When the terms of a claim are considered to be indefinite, at least two approaches to
> the examination of an indefinite claim relative to the prior art are possible. First, where
> the degree of uncertainty is not great, and where the claim is subject to more than one
> interpretation and at least one interpretation would render the claim unpatentable over
> the prior art, an appropriate course of action would be for the examiner to enter two
> rejections: (A) a rejection based on indefiniteness under 35 U.S.C. 112, second
> paragraph; and (B) a rejection over the prior art based on the interpretation of the claims
> which renders the prior art applicable. See, e.g., Ex parte Ionescu, 222 USPQ 537 (Bd.
> App. 1984). When making a rejection over prior art in these circumstances, it is
> important for the examiner to point out how the claim is being interpreted. Second,
> where there is a great deal of confusion and uncertainty as to the proper interpretation
> of the limitations of a claim, it would not be proper to reject such a claim on the basis of
> prior art. As stated in In re Steele, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a
> rejection under 35 U.S.C. 103 should not be based on considerable speculation about
> the meaning of terms employed in a claim or assumptions that must be made as to the
> scope of the claims".

Thus, the examiner respectfully submits that there is a great deal of confusion

and uncertainty as to the proper interpretation of the limitations of claims 14, 15, 17, and

18, and therefore it would not be proper to reject such a claim on the basis of prior art

(As stated in In re Steele, 305 F.2d 859, 134 USPQ 292 (CCPA 1962), a rejection under

35 U.S.C. 103 should not be based on considerable speculation about the meaning of

terms employed in a claim or assumptions that must be made as to the scope of the

claims). For example, claim 14 depends on cancelled claim 4 which previously

depended on claim 1, and an assumption that claim 14 should now depend on claim 1

raises too many numerous 112 issues due to the omission of claimed elements due to

cancelled claim 4. The examiner respectfully submits these numerous 112 issues

provide for "a great deal of confusion and uncertainty as to the proper interpretation of

the limitations" of claims 14, 15, 17, and 18.

Claim 1 recites the limitation "the microprocessor" in line 16. There is insufficient

antecedent basis for this limitation in the claim. It will be assumed to be the processor.

Claim Rejections - 35 USC § 103

The text of those sections of Title 35, U.S. Code not included in this action can

be found in a prior Office action.

3.   Claims 1, 7, 19, are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Pat. No. 4,796,142 to Libert (hereinafter referred to as Libert) in view of U.S. Pub.

No. 2004/0189236 to Chan et al (hereinafter referred to as Chan).

Referring to claims 1, 7, 19, Libert teaches device/method/processor and

memory storing instructions for thermal overload protection of an electrical device,

particularly an electric motor (Abstract; Col. 1, lines 46-64), comprising a current meter

configured to measure at least one load current supplied to the electrical device (Col.

33, lines 50-51), a processor system configured to calculate a thermal load on the

electrical device on the basis of said at least one load current, and a switch device

disconnecting a current supply when the thermal load reaches a given threshold level,

said processor system employing X-bit, and being configured to scale the measured

current into unit values to a range of 0 to Y, wherein Y represents Y/100% of a nominal

current and Y is a real number greater than zero (Col. 11, lines 24-56), and to calculate

the thermal load using a mathematical equation that, together with its operands, is

programmed into the processor system structured (Col. 33, line 52 – Col. 34, line 5; Col.

22, lines 29 – Col. 23, line 49).

Referring to claims 1, 7, 19, Libert fails to teach a processor system employing

32-bit fixed-point arithmetic, and the processor system structured such that calculating a

result or a provisional result never exceeds the 32-bit value.

However, referring to claims 1, 7, 19, Chan teaches a processor system

employing 32-bit fixed-point arithmetic, and the processor system structured such that

calculating a result or a provisional result never exceeds the 32-bit value (paragraph 30

– paragraph 58, especially paragraph 51). It is inherent that fixed-point number can

exactly represent any integer only within the range determined by the magnitude bits,

32 in the case of the 32-bit DSP.

Libert and Chan are analogous art because they are from the same field of

endeavor, motor control.

At time of the invention, it would have been obvious to a person of ordinary skill

in the art to modify Libert with the 32-bit fixed-point arithmetic processor of Chan. The

suggestion/motivation would have been because fixed-point numbers, in comparison

with floating point numbers, are compact and efficient and operations on fixed point

numbers take less time than floating point operations.

4.   Claims 1, 7, 19, are rejected under 35 U.S.C. 103(a) as being unpatentable over

U.S. Pat. No. 4,796,142 to Libert (hereinafter referred to as Libert) in view of U.S. Pat.

No. 4,807,153 to Onaga et al (hereinafter referred to as Onaga), in view of U.S. Pat. No.
5,329,768 to Moscrip (hereinafter referred to as Moscrip).

Referring to claims 1, 7, 19, Libert teaches device/method/processor and
memory storing instructions for thermal overload protection of an electrical device,
particularly an electric motor (Abstract; Col. 1, lines 46-64), comprising a current meter
configured to measure at least one load current supplied to the electrical device (Col.
33, lines 50-51), a processor system configured to calculate a thermal load on the
electrical device on the basis of said at least one load current, and a switch device
disconnecting a current supply when the thermal load reaches a given threshold level,
said processor system employing X-bit, and being configured to scale the measured
current into unit values to a range of 0 to Y, wherein Y represents Y/100% of a nominal
current and Y is a real number greater than zero (Col. 11, lines 24-56), and to calculate
the thermal load using a mathematical equation that, together with its operands, is
programmed into the processor system structured (Col. 33, line 52 – Col. 34, line 5; Col.
22, lines 29 – Col. 23, line 49).

Referring to claims 1, 7, 19, Libert fails to teach a processor system employing X-
bit fixed-point arithmetic, and the processor system structured such that calculating a
result or a provisional result never exceeds the X-bit value.

However, referring to claims 1, 7, 19, Onaga teaches a processor system
employing X-bit fixed-point arithmetic, and the processor system structured such that a
result or a provisional result never exceeds the X-bit value (Col. 11, lines 1-5, TMS-

32010 16bit processor). It is inherent that fixed-point number can exactly represent any integer only within the range determined by the magnitude bits, 16 in the case of the TMS-32010.

Libert and Onaga are analogous art because they are from the same field of endeavor, motor control.

At time of the invention, it would have been obvious to a person of ordinary skill in the art to modify Libert with the fixed-point arithmetic processor of Onaga. The suggestion/motivation would have been because fixed-point numbers, in comparison with floating point numbers, are compact and efficient and operations on fixed point numbers take less time than floating point operations.

Referring to claims 1, 7, 19, Libert in view of Onaga fails to teach a processor system employing 32-bit fixed-point arithmetic, structured such that a result or a provisional result never exceeds the 32-bit value.

However, referring to claims 1, 7, 19, Moscrip teaches a processor system employing 32-bit fixed-point arithmetic, structured such that a result or a provisional result never exceeds the 32-bit value (Col. 13, lines 36- Col. 14, line 9). It is inherent that fixed-point number can exactly represent any integer only within the range determined by the magnitude bits, 32 in the case of the MC68332 or 32-bit fixed point DSPs.

Libert in view of Onaga and Moscrip are analogous art because they are from the same field of endeavor, motor control.

Because both Libert in view of Onaga and Moscrip teach a processor system

employing X-bit fixed-point arithmetic, structured such that a result or a provisional

result never exceeds the X-bit value, it would have obvious to one of ordinary skill in the

art at the time that the invention was made to substitute one processor for the other to

achieve the predictable result of a processor system employing 32-bit fixed-point

arithmetic, structured such that a result or a provisional result never exceeds the 32-bit

value.

Allowable Subject Matter

5.   Claims 8, 11, are objected to as being dependent upon a rejected base claim, but

would be allowable if rewritten in independent form including all of the limitations of the

base claim and any intervening claims. Claims 2, 3, 6 would be allowable if rewritten to

overcome the rejection(s) under 35 U.S.C. 112, 2nd paragraph, set forth in this Office

action and to include all of the limitations of the base claim and any intervening claims.

The following is a statement of reasons for the indication of allowable subject

matter:

While Libert teaches device/method/processor and memory storing instructions

for thermal overload protection of an electrical device, particularly an electric motor

(Abstract; Col. 1, lines 46-64), comprising a current meter configured to measure at

least one load current supplied to the electrical device (Col. 33, lines 50-51), a

processor system configured to calculate a thermal load on the electrical device on the

basis of said at least one load current, and a switch device disconnecting a current

supply when the thermal load reaches a given threshold level, said processor system

employing X-bit, and being configured to scale the measured current into unit values to a range of 0 to Y, wherein Y represents Y/100% of a nominal current and Y is a real number greater than zero (Col. 11, lines 24-56), and to calculate the thermal load using a mathematical equation that, together with its operands, is programmed into the processor system structured (Col. 33, line 52 – Col. 34, line 5; Col. 22, lines 29 – Col. 23, line 49).

And, Chan teaches a processor system employing 32-bit fixed-point arithmetic, and the processor system structured such that calculating a result or a provisional result never exceeds the 32-bit value (paragraph 30 – paragraph 58, especially paragraph 51). It is inherent that fixed-point number can exactly represent any integer only within the range determined by the magnitude bits, 32 in the case of the 32-bit DSP.

And, Onaga teaches a processor system employing X-bit fixed-point arithmetic, and the processor system structured such that a result or a provisional result never exceeds the X-bit value (Col. 11, lines 1-5, TMS-32010 16bit processor). It is inherent that fixed-point number can exactly represent any integer only within the range determined by the magnitude bits, 16 in the case of the TMS-32010.

And, Moscrip teaches a processor system employing 32-bit fixed-point arithmetic, structured such that a result or a provisional result never exceeds the 32-bit value (Col. 13, lines 36- Col. 14, line 9). It is inherent that fixed-point number can exactly represent any integer only within the range determined by the magnitude bits, 32 in the case of the MC68332 or 32-bit fixed point DSPs.

None of Libert, Chan, Onaga or Moscrip, taken either alone or in obvious combination discloses a method/device/processor and memory storing executable instructions having all the claimed features of applicant's instant invention, specifically including:

calculating the thermal load using a mathematical equation that, together with its operands, is programmed into the microprocessor system structured such that a result or a provisional result never exceeds the 32-bit value;

wherein the mathematical equation is .THETA. k = .DELTA. .times. .times. T * i 2 C + (1 - .DELTA. .times. .times. T R * C) * .THETA. k – 1;

wherein .THETA.=currently calculated thermal load, wherein .THETA. k-1=previous thermal load, .DELTA.T=interval for thermal load calculation, R=cooling factor of electrical device, C=trip-class factor, i= measured current.

It is for these reasons that applicant's invention defines over the prior art of record.

Response to Arguments

6.   Applicant's arguments with respect to all the claims have been considered but are moot in view of the new ground(s) of rejection.

Conclusion

7.   Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within

TWO MONTHS of the mailing date of this final action and the advisory action is not

mailed until after the end of the THREE-MONTH shortened statutory period, then the

shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

the advisory action. In no event, however, will the statutory period for reply expire later

than SIX MONTHS from the date of this final action.

8.   Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Sean P. Shechtman whose telephone number is

(571)272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

        If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number

for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

SPS

Sean P. Shechtman

August 26, 2008

/Sean P. Shechtman/
Primary Examiner, Art Unit 2121